MONTANA DEPARTMENT OF FISH AND GAME
FISHERIES DIVISION

JOB PROGRESS REPORT

State Montana Title Investigation of More

Project No. F-12-R-24 Important Waters

Job No. II-b Title Georgetown Lake Management

Period Covered: July 1, 1977 - Survey

June 30, 1978

ABSTRACT

Summer fishermen averaged 0.6 fish per hour, and ice fishermen, 2.5 fish per hour during the 1977-78 fishing season on Georgetown Lake. Rainbows comprised 71.6% of the summer catch while kokanee made up 58.1% of the winter catch.

Rainbows averaged 11.1 inches and 10.0 inches in the summer and winter respectively while kokanee averaged 11.6 inches and 9.3 inches in summer and winter. Younger fish generally predominate in the winter catch. Spawning kokanee averaged 12.0 inches while spawning brook trout averaged 10.5 inches in length. The kokanee spawners are comparable to spawners in past years but the brook trout spawners declined approximately 1.5 inches.

Age 0+ and 1+ rainbows predominated in the catch. The majority of the rainbows are captured by anglers before they reach age II. Flourescent pigments were used to mark 46.8% of the rainbows planted in May, 1977, but only 11.3% of the recaptured fish were marked. All the fish showed an apparent scale planting check, indicating that they were all hatchery trout and that mark loss was substantial. Natural reproduction appears to be nominal.

Winter dissolved oxygen levels suffered only moderate declines even though maximum snow depths reached 20.0 inches and ice depths reached 26.5 inches.

BACKGROUND

Georgetown Lake is a shallow, 2,768 acre lake at an elevation of 6,400 feet, approximately 18 miles west of Anaconda. Georgetown is rated as one of the most heavily fished lakes in the state. Sub-catchable rainbows are planted each spring, while the kokanee and brook trout are self-sustaining. Rainbows are the dominant gamefish but kokanee have steadily increased in the catch in recent years.

FINDINGS

1977 Summer Creel Census

Thirteen days of creel census were conducted during the 1977 summer fishing season. The 255 shore fishermen interviewed fished 802 hours to creel 353 fish for an average of 0.4 fish per hour (Table 1). Boat fishermen (66) fished 201 hours to catch 284 fish at a rate of 1.4 fish per hour. Collectively, the 321 anglers averaged 0.6 fish per hour (Table 1). This rate is at the lower end of the range of catch rates (0.6-1.4) for the last decade. Since not all of the censuses have been conducted on a random basis the statistics should be viewed only on a trend basis. A majority of the anglers interviewed (65%) resided within 40 miles of the lake while another 18% were state residents from beyond 40 miles and 17% were non-residents.

Of the game fish checked, rainbows (456) comprised 71.6% of the catch, while kokanee (175) and brook trout (53) contributed 27.5% and 0.9%, respectively. Rainbows averaged 11.1 inches in total length and kokanee averaged 11.6 inches (Table 2). While slightly larger, these lengths are not statistically different from the mean lengths of fish checked in the 1970 and 1974 summer creel censuses.

Table 1. Angler effort and success during the summer, 1977 and winter, 1977-78 fishing seasons on Georgetown Lake

Season	Angler type	No. interviewed	Fish/hour	Fish/day[1/]	Trip length[1/]
Summer	shore	255	0.4	2.0 (22)	3.7 (22)
	boat	66	1.4	5.4 (34)	3.1 (34)
	all	321	0.6	4.1 (56)	3.3 (56)
Winter	all	237	2.5	14.1 (42)	5.5 (42)

1/ Sample size in parentheses indicates anglers completing trip

Table 2. Composition of summer, 1977 and winter, 1977-78 angling catches in Georgetown Lake (sample size in parentheses)

Season	Species	Mean length	Mean weight	Percent of catch
Summer	Rainbow	11.1 (251)	0.57 (202)	71.6 (456)
	Kokanee	11.6 (23)	0.49 (5)	27.5 (175)
	Brook trout	11.4 (4)	0.72 (3)	0.9 (6)
Winter	Rainbow	10.0 (171)	0.42 (29)	38.7 (851)
	Kokanee	9.3 (194)	0.27 (37)	58.1 (1276)
	Brook trout	10.5 (12)	-	3.2 (71)

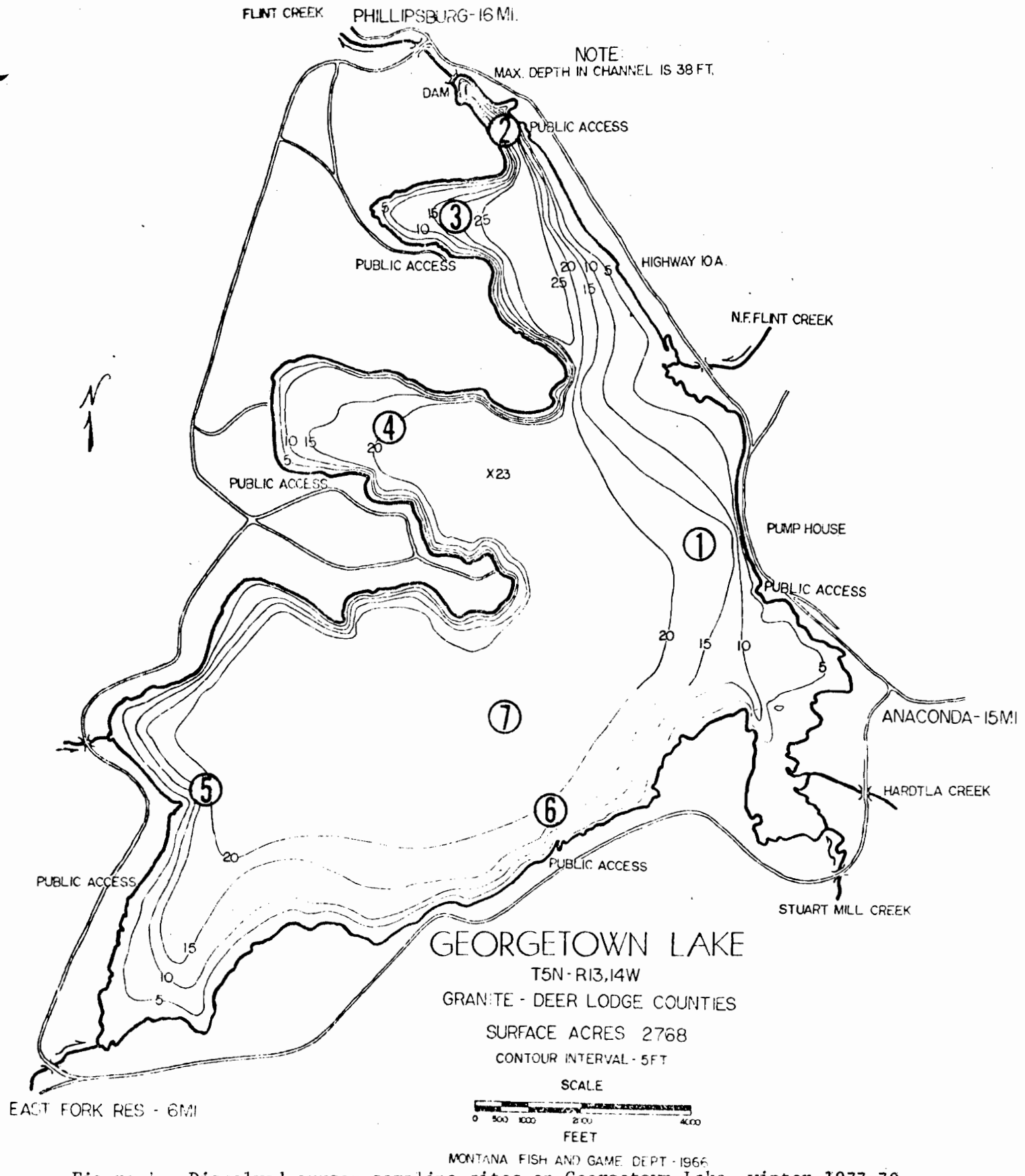

Figure 1. Dissolved oxygen sampling sites on Georgetown Lake, winter 1977-78

Age and Growth

Research was initiated in December, 1976, to determine age and growth relationships for rainbow trout and kokanee in Georgetown Lake.

Scales and lengths were taken from rainbows captured by angling and gillnetting. Although sample sizes are small, the two capture methods appear to produce similar results for fish over 8 inches (Table 4). Comparisons of angling and gillnet catches will be expanded to determine if the creel census will supply unbiased estimates of growth.

Table 4. Comparison of mean lengths of rainbows captured by angling and gillnets in Georgetown Lake, summer, 1977. (Sample size in parentheses)

Time period	Age	Mean total length	
		Gillnet	Creel census
June 1-15	1+	10.5 (14)	11.0 (25)
	11+	12.7 (3)	13.6 (12)
	111+	14.9 (1)	-
July 1-15	0+	8.2 (1)	-
	1+	11.4 (16)	11.3 (17)
	11+	13.7 (4)	14.1 (4)
	111+	14.6 (1)	13.9 (1)
July 16-August 31	0+	8.3 (14)	8.0 (4)
	1+	11.6 (15)	11.0 (29)
	11+	13.1 (4)	13.6 (6)
	111+	-	15.1 (4)

Anglers appear to select for fish over 8 inches. Trout planted at 5.1 inches on May 23, 1977, reached 8 inches by mid-July (Figure 2) and were recruited into the fishery. Age I+ fish predominate in the catch in early summer (Figure 3) while 0+ rainbows increased in the proportion of the catch in late summer and predominated in the winter season. Very few of the aged fish were age III or older.

Aging of rainbow scales was confused by an apparent anomaly in the scale growth pattern. Examination of scales from marked fish confirmed that a false annulus was present. Back-calculation indicated that normal growth resumed at 6.6 inches, indicating a growth check occurs shortly after planting.

Fish marked with flourescent pigments were examined prior to planting and showed that 93.7% or 140,404 of the processed fish retained their mark. This represents 46.8% of the total plant of 300,171. Initial recapture samples showed a much lower proportion of marked fish, 11.3%, indicating that either natural reproduction or mark loss is substantial. All scales examined showed an apparent planting check indicating that they were from

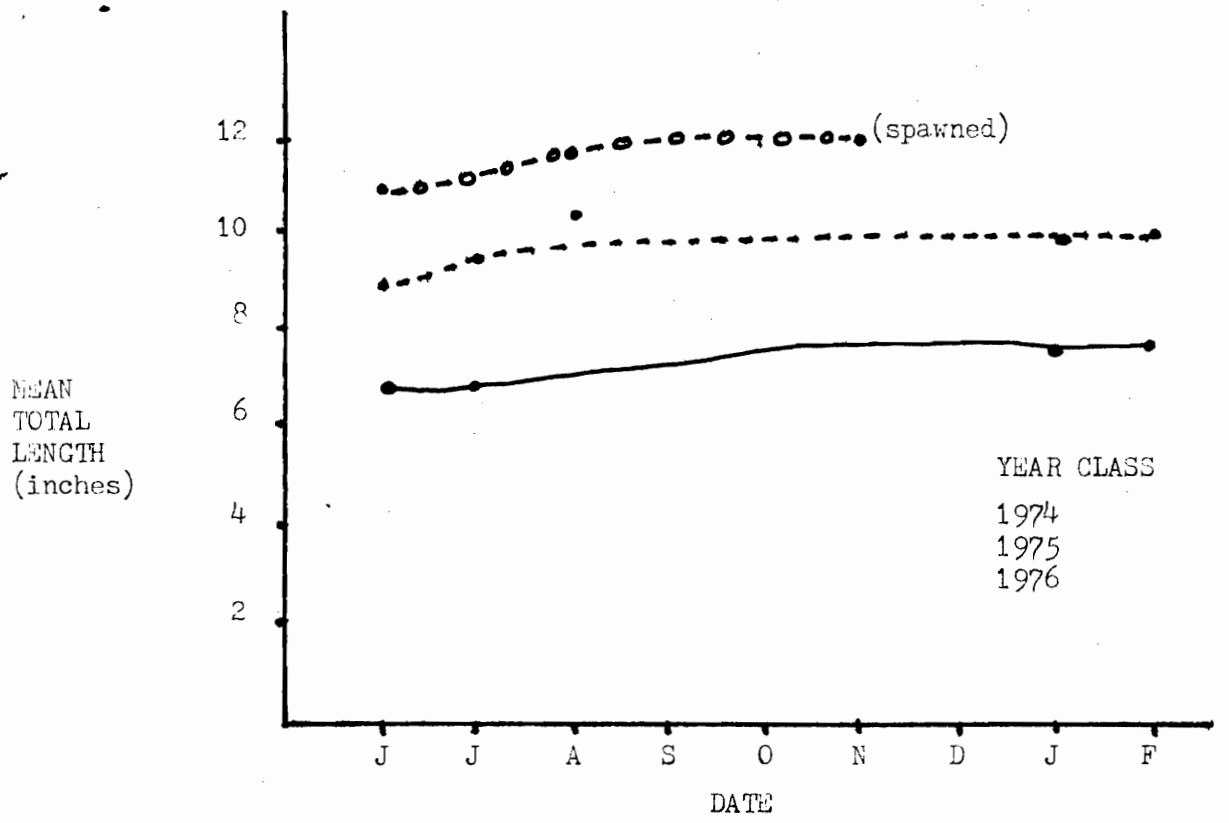

Figure 4. Average length of kokanee caught in Georgetown Lake, June,1977 to February,1978.

planted trout and therefore that mark loss was the major cause of the low proportion of marked fish. Presence/absence of the scale planting check may be a more reliable estimator of wild trout/hatchery trout ratio.

Age I+ kokanee averaged 6.7 inches in June, 1977 while II+ and III+ fish averaged 9.1 and 11.1 inches respectively (Figure 4). Age I+ and II+ salmon grew 1.1 and 0.7 inches respectively by January, 1978, while III+ fish spawned and died at 11.9 inches in November and December, 1977. Salmon are recruited into the fishery at the end of the second year (age II) at approximately 8 inches.

RECOMMENDATIONS

An intensive creel census should be conducted during the winter and summer 1978-79 fishing seasons to determine changes in angler effort and success. Collection of age and growth data on game fish during the census will provide additional information on key characteristics of the fishery. A survey should be initiated to determine angler preference in management of the fishery.

The angler harvest of kokanee should continue to be monitored to determine the effects of liberalized daily limits (35 salmon per day).

The brook trout spawning run should continue to be monitored to determine the effect of heavy angling pressure at the mouth of Flint Creek.

Dissolved oxygen should be monitored during periods of ice-cover to delineate oxygen depletions.

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Water referred to: 2-06-7961-5 Georgetown Lake